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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,778	08/07/2001	John Cooper	P280281	3688
909	7590	12/09/2003	EXAMINER	
PILLSBURY WINTHROP, LLP			BLACKNER, HENRY A	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			3641	

DATE MAILED: 12/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/830,778

Applicant(s)

COOPER ET AL.

Examiner

Henry A. Blackner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 20 and 26-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-15, 18, 19, 21-25, and 29-34 is/are rejected.
- 7) ☒ Claim(s) 10, 16, and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

1. U.S. Patent No. 3,978,791 (page 5, line 1)
2. U.S. Patent No. 3,724,383 (page 5 line 1)

Specification

The disclosure is objected to because of the following informality: The data that is recorded in Table 1, page 25, does not corroborate the testing parameters as noted in examples 1-19. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 34 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent No. 4,213,392 to Usel.

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Usel clearly discloses a composition suitable for use in an explosive detonator, the composition comprising an intimate mixture of relatively large particle size, porous, powdered explosive having interstitial spaces, and a relatively small particle size high burn-rate pressurizing initiator located within the interstitial spaces, in column 4 lines 45-68 and column 5 lines 1-9.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9, 11-15, 18, 19, 21-25, and 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindqvist in view of Usel.

In regards to claim 1, Lindqvist discloses the claimed invention in figure 2, column 3 lines 5-12, lines 26-29, and lines 38-50, column 4 lines 41-52 and lines 62-68, column 5 lines 1-4, column 6 lines 5-9, lines 16-35, lines 40-51, and lines 62-64, column 7 lines 1-3, lines 6-13,

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lines 28-43, and lines 48-52, column 8 lines 26-39 and lines 66-68, column 9 lines 1-5 and lines 41-50, and column 10 lines 5-20 and lines 26-68, a detonator (20) comprising a hollow detonator shell (1) having an open end and a closed end, an igniting device (6) at the open end of the hollow detonator shell, optionally a delay element (4) adjacent the igniting device, an initiating element (3) comprising an initiation portion (9) and optionally a transition portion (12), and optionally a base charge (2), wherein the initiation portion is at least partially contained within a confinement sleeve and comprises a relatively large particle size, porous, powdered explosive having interstitial spaces. Lindqvist does not disclose that the initiation portion is comprised of an intimate mixture of the relatively large particle size, porous, powdered explosive and a relatively small particle size, high burn-rate pressurizing initiator located within the interstitial spaces of the relatively large particle size, porous, powdered explosive.

Ussel teaches in column 4 lines 45-68 and column 5 lines 1-9, that an ignition charge is composed of a relatively large particle size, porous, nitrocellulose bodies with a nitrogen content of approximately 13%, in order to provide a sufficient burning or ignition speed. Oxygen carriers are accommodated within the interstitial spaces of the nitrocellulose bodies, such as ammonium picrate or potassium picrate. The ignition charge was made porous by dissolving a pore-forming material out of pre-formed nitrocellulose bodies at a boiling temperature. The porous nitrocellulose bodies were then introduced to a hot 1% potassium picrate solution, causing the nitrocellulose bodies to become thoroughly impregnated with the potassium picrate solution by subjecting the mixture to a vacuum. Subsequently, the mixture was removed from the solution and cooled at room temperature, which produced a crystallization of the potassium picrate within the interstitial spaces of the nitrocellulose bodies. It would have been obvious to

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one of ordinary skill in the art at the time the invention was made to employ Usel's method of impregnating a relatively large particle size, porous, powdered explosive with a relatively small particle size, high burn-rate pressurizing initiator located within the interstitial spaces of the relatively large particle size, porous, powdered explosive, in order to achieve the desired effect of improving and regulating the combustion speed of an ignition charge.

In regards to claim 2, Lindqvist in view of Usel disclose the claimed invention, wherein the porous powdered explosive comprises PETN, RDX, HMX, Tetryl, TNT, or a mixture thereof, see the rejection of corresponding parts of claim 1, above.

In regards to claim 3, Lindqvist in view of Usel disclose the claimed invention, wherein the porous powdered explosive comprises PETN, see the rejection of corresponding parts of claim 1, above.

In regards to claim 4, Lindqvist in view of Usel disclose the claimed invention, wherein the PETN has a number average particle size of greater than 100 microns; see the rejection of corresponding parts of claim 1, above.

In regards to claim 5, Lindqvist in view of Usel disclose the claimed invention, wherein the high burn-rate pressurizing initiator is potassium picrate, see the rejection of corresponding parts of claim 1, above.

In regards to claim 6, Lindqvist in view of Usel disclose the claimed invention, wherein the high burn-rate pressurizing initiator is potassium picrate, see the rejection of corresponding parts of claim 1, above.

In regards to claim 7, Lindqvist in view of Usel disclose the claimed invention, wherein the high burn-rate pressurizing initiator comprises a mixture of two separate components, namely

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a material having a high burn-rate at low pressure and an oxidizer, see the rejection of corresponding parts of claim 1, above.

In regards to claim 8, Lindqvist in view of Usel disclose the claimed invention, wherein the oxidizer comprises potassium perchlorate or ammonium perchlorate; see the rejection of corresponding parts of claim 1, above.

In regards to claim 9, Lindqvist in view of Usel disclose the claimed invention, wherein the oxidizer comprises potassium perchlorate; see the rejection of corresponding parts of claim 1, above.

In regards to claim 11, Lindqvist in view of Usel disclose the claimed invention, wherein the transition portion comprises PETN, RDX, HMX, Tetryl, or a mixture thereof, see the rejection of corresponding parts of claim 1, above.

In regards to claim 12, Lindqvist in view of Usel disclose the claimed invention, wherein the transition portion comprises PETN; see the rejection of corresponding parts of claim 1, above.

In regards to claim 13, Lindqvist in view of Usel disclose the claimed invention, wherein the PETN is pressed to a density of between 1.0 g/cc and 1.2 g/cc, see the rejection of corresponding parts of claim 1, above.

In regards to claim 14, Lindqvist in view of Usel disclose the claimed invention, wherein the confinement sleeve is a steel, copper, or stainless steel sleeve; see the rejection of corresponding parts of claim 1, above.

In regards to claim 15, Lindqvist in view of Usel disclose the claimed invention, wherein the confinement sleeve is a circular sleeve having a wall thickness of between 0.1 mm and 1.5 mm, see the rejection of corresponding parts of claim 1, above.

In regards to claim 18, Lindqvist in view of Usel disclose the claimed invention, wherein the initiation portion comprises an additional binder component; see the rejection of corresponding parts of claim 1, above.

In regards to claim 19, Lindqvist in view of Usel disclose the claimed invention, wherein the igniting device comprises a flame and/or shock wave from an electric match or a shock tube, which is inserted into the open end of the hollow detonator shell, see the rejection of corresponding parts of claim 1, above.

In regards to claim 21, Lindqvist in view of Usel disclose the claimed invention, wherein a detonator as disclosed in claim 1, is essentially free of added primary explosives, see the rejection of corresponding parts of claim 1, above.

In regards to claim 22, Lindqvist in view of Usel disclose the claimed invention, wherein a detonator as claimed in claim 1, comprises a delay element adjacent the igniting device, so as to form a delay detonator, see the rejection of corresponding parts of claim 1, above.

In regards to claim 23, Lindqvist in view of Usel disclose the claimed invention in the rejection of corresponding parts of claim 1, but does not disclose that the detonator is impact resistant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to develop an explosive detonator, which incorporates secondary explosives, since it was known in the art that explosive detonators, which incorporate primary explosives are inherent to full detonation due to any damage, impact, heat or friction that is delivered to the

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explosive detonator and are able to cause a cascade detonation in closely arranged detonators due to receiving conveyed shock waves from an adjacent detonation, since primary explosives are able to develop full detonation when simulated with an igniting device within a volume of a few cubic millimeters of the explosive, while a secondary explosive can not be detonated under similar conditions.

In regards to claim 24, Lindqvist in view of Usel disclose the claimed invention, wherein the detonator is propagation resistant; see the rejection of corresponding parts of claim 23, above.

In regards to claim 25, Lindqvist in view of Usel disclose the claimed invention, an in-hole detonator (20) comprising a hollow detonator shell (1) having an open end and a closed end, an igniting device (6) at the open end of the hollow detonator shell, optionally a delay element (4) adjacent the igniting device, an initiating element (3) comprising an initiation portion (9) adjacent the delay element or the igniting device and optionally a transition portion (12), and a base charge (2), wherein the initiation portion is at least partially contained within a confinement sleeve and comprises an intimate mixture of a relatively large particle size, porous, powdered explosive having interstitial spaces, and a relatively small particle size, high burn-rate pressurizing initiator located within the interstitial spaces, see the rejection of corresponding parts of claim 1, above.

In regards to claim 29, Lindqvist in view of Usel disclose the claimed invention, an initiating element (3) for use in a detonator (20) comprising an initiation portion (9) and optionally a transition portion (12) wherein the initiation portion is at least partially contained within a confinement sleeve and comprises an intimate mixture of a relatively large particle size, porous, powdered explosive having interstitial spaces, and a relatively small particle size, high

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burn-rate pressurizing initiator located within the interstitial spaces, see the rejection of corresponding parts of claim 1, above.

In regards to claim 30, Lindqvist in view of Usel disclose the claimed invention, a process for manufacturing a detonator as disclosed in claim 1, comprising, in order: optionally inserting a base charge into a hollow detonator shell, inserting an initiating element comprising an initiation portion and optionally a transition portion into the hollow detonator shell, optionally inserting a delay element into the hollow detonator shell, and inserting an igniting device into the hollow detonator shell, wherein all components are operationally adjacent each other, and wherein the initiation portion comprises an intimate mixture of a relatively large particle size, porous powdered explosive having interstitial spaces, and a relatively small particle size, high burn-rate pressurizing initiator located within the interstitial spaces, see the rejection of corresponding parts of claim 1, above.

In regards to claim 31, Lindqvist in view of Usel disclose the claimed invention, a process as disclosed in claim 30, additionally comprising the step of granulating the initiation portion, see the rejection of corresponding parts of claim 1, above.

In regards to claim 32, Lindqvist in view of Usel disclose the claimed invention, a process as disclosed in claim 31, wherein the initiation portion is combined with a granulating agent prior to granulation, see the rejection of corresponding parts of claim 1, above.

In regards to claim 33, Lindqvist in view of Usel disclose the claimed invention, a method of blasting comprising initiation of an explosive charge utilizing at least one detonator, wherein the at least one detonator is as disclosed in claim 1, see the rejection of corresponding parts of claim 1, above.

Allowable Subject Matter

Claims 10, 16, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments, see Paper No. 14, filed 29 August 2003, with respect to the rejection(s) of claim(s) 1-4, 7-9, 11, 12, 14, 15, 18, 19, 21-25, and 29-34 under Lindqvist, claim(s) 5 and 6 under Lindqvist in view of Dinegar, and claim(s) 13 under Lindqvist in view of Wang, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of claim(s) 1-9, 11-15, 18, 19, 21-25, and 29-33 under Lindqvist in view of Usel and claim(s) 34 under Usel.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Henry A. Blackner whose telephone number is 703-305-4799. The examiner can normally be reached on 09:15 - 17:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 703-306-4198. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9326.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5771.

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30 November 2003



MICHAEL J. CARONE
SUPERVISORY PATENT EXAMINER